

VI.—On some Cricket-Locusts (Gryllacridae) from Mt. Dulit and Mt. Murud, Sarawak. By H. H. KARNY, Buitenzorg, Java.

(With one Plate.)

SUBFAM. STENOPELMATINAE.

SIA FEROX Giebel.

1861. Giebel, Zeitschr. Naturw., xviii, p. 116.

1922. Hebard, Proc. Ac. Nat. Sci. Philad., lxxiv, p. 286 (*Bugajus couloni*).

1924. Karny, Treubia, v, 1--3, p. 32 (with list of literature).

1 larva (dried) from Tutau River; 1 larva (in alcohol) from Mt. Dulit, 4000 feet, leg. Dr. E. Mjöberg.

SUBFAM. RHAPHIDOPHORINAE.

RHAPHIDOPHORA CHOPARDI Karny.

1924. Karny, Treubia, v, 1--3, p. 40.

1 ♂ from Mt. Dulit.

SUBFAM. GRYLLACRINAE.

GRYLLACRIS TEUTHROIDES n. sp. (Plate 2, fig. 1).

♂. Size moderately large and very slender. Tawny-brown. Head practically concolorous, narrowly ovate when seen in front. Forehead depressed below, densely ovate set with stiff hairs and, especially in lower part, with some longer bristles. Occiput and vertex strongly arched; fastigium slightly depressed in front with somewhat protruding lateral margins; without ocellar spots.

Pronotum yellowish-brown, much darker along either side of disc. Fore and hind margin truncate. Lateral lobes not high, little raised; fore angle rounded, lower margin slightly descending backwards, hind angle truncated, hind margin slightly excavated. U-shaped sulcus and the oblique hind one well marked, broad and rather shallow; space between strongly

arched. Longitudinal furrow of pronotum forming a sharp, distinctly marked line. Cross sulci hardly perceptible.

Tegmina twice as long as the whole body, moderately broad, brownish; basal half along the fore margin somewhat more hyaline. All veins tawny. Venation according to type I. 4 praecostals; costa and subcosta simple, the area between them not wider than the subcostal area before the middle; this latter one distinctly narrowed distad from the middle. Radial vein simple; radial sector arising in the middle of tegminal length, simply forked; fork branches about twice as long as the fork shaft. Medial vein very approximated to radial stem in basal part, but not united therewith, then emitting an oblique cross vein against cubital fore branch, further remaining simple throughout. Cubital vein forked at the end of basal fourth of tegminal length; fore branch then receiving the oblique cross vein from media, then simply forked again till before the end of basal third of tegminal length; hind branch of chief fork remaining simple. 4 anals (incl. Cus.), the last one forked near base. Hind wings practically hyaline.

Legs tawny. Fore and middle tibiae with 5 pairs of extraordinarily long, movable spines (fig. 1a); spines of first (basal) pair about one-third of tibial length, on fore tibiae a

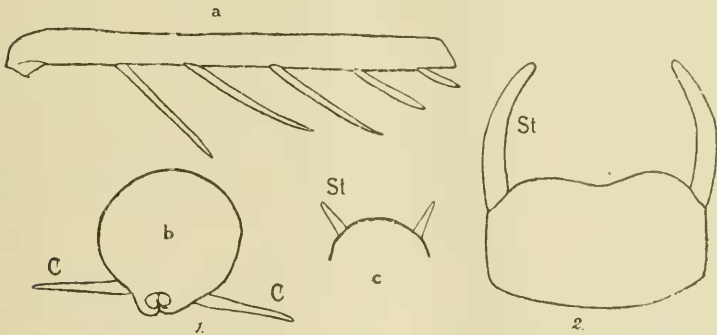


Fig. 1. *Gryllacris teuthroides* ♂. a, middle tibia; b, last tergite as seen from behind; c, subgenital plate. Fig. 2. ♂ subgenital plate of *Gryllacris mjobergi*.

little longer, on middle tibiae a little shorter; those of last (apical) pair short, inserted near the apex. Hind femora with slightly darker spines, 9 on outer, 7 on inner margin. Hind tibiae above with 6 darker spines on either edge.

Eighth tergite fully twice as long as the preceding one; ninth (fig. 1b) strongly arched, with two strongly incurved spines beneath apex. Cerci moderately long, densely haired. Subgenital plate (fig. 1c) semi-circularly rounded at apical margin, by no means excised; styles short, conical, hardly one-third of cercal length.

♂. Length of body 17 mm., pronotum 3.7 mm., tegmina 34 mm., fore femora 7 mm., hind femora 13.5 mm.

1 ♂ from Mt. Dulit.

Belonging to the *phryganoides-arctata*-group, differing from all the hitherto known species of this group by the shape of ♂ subgenital plate. In colour and general appearance similar to *G. sphegidiprueda* Karny, but differing from it by its larger size and especially by the longer tegmina. In this latter respect resembling *G. phryganoides* De Haan, from which it differs by its darker colour, especially along the discal sides, and by the narrower tegmina. Spines of fore and middle tibiae, finally, also being longer than in all the hitherto known species of this group.

GRYLLACRIS ATRATA Walker.

To this species belongs probably 1 ♀ larva from Mt. Dulit, as it is suggested by the colour of legs. This larva has, however, the forehead darker, reddish castaneous, and the fastigia furnished with distinct, yellow ocellar spots, the lower one being ovate, higher than broad, the two upper ones a little shorter and especially very much narrower. If this should not be a merely larval character, the specimen might belong perhaps to a new local race, characterized by the described coloration characters. This cannot be decided, naturally, from a larval specimen only.

GRYLLACRIS FASCICULATA *rotundata* n. subsp. (Plate 2, fig. 2).

Differing from the typical species especially by the much more rounded, nearly cycloid hind wings which are only one-third longer than wide, whilst in the typical species (comp. Karny, *Trenbia*, v, 1--3, p. 68, 233) "presque une fois et demie plus longues que larges" (Pictet and Saussure, 1896). In the typical species the pale cross veins are bordered by sharp, red cross bands, the remaining part of cells whitish hyaline, whilst in *rotundata* the hind wings are more pink coloured (somewhat too red in the coloured figure on plate 5),

this colour becoming gradually paler against the cell centres. Tegmina somewhat wider relatively than in the typical species. Fore knees blackish, the others pale; all tibiae bright yellow with a verdigris green hue, blackish at apex; tarsi also dark. Head and pronotum practically concolorous, below the eyes along subocular sulci the genae somewhat darker.

♂. Length of body 25 mm., pronotum 7 mm., tegmina 38 mm. width 12.7 mm., hind wings 37 mm. width 28 mm., fore femora 9.7 mm., hind femora 17.4 mm.

1 ♂ from Mt. Murud, 6000 feet.

GYLLACRIS MJÖBERGI n. sp. (Plate 2, fig. 3, 3a).

♂. Size rather small, moderately stout. General colour brownish-yellow, mouth parts black, pronotum with black markings, fore knees black.

Head ovate, as seen in front; occiput and vertex arched. Fastigium of the latter hardly wider than the first antennal joint, slightly excavate, with somewhat protruding lateral margins, surface with some faintly impressed dots. Three ocellar spots visible, pale yellow, not well defined, the lower one about twice as large as the narrow upper ones. Cross furrow between fastigium frontis and verticis distinct. Forehead roughened by strong, impressed dots, tawny brown, broadly bordered with shining black along clypeal margin. Genae, clypeus, labrum and mandibles also shining black (not dark enough in fig. 3a on plate 2). Clypeus and labrum also with impressed dots. Clypeus with a pale yellow spot on either distal angle. Mandibles sharply pointed, distinctly overreaching the end of labrum. Palpi pale brownish-yellow. Antennae unicolorous, tawny yellow.

Pronotum scarcely as long as wide, as seen from above, pale brownish-yellow, blackish bordered all around all margins, with sharp black markings arranged in the same manner as in *G. signifera* (Stoll), *G. modiglianii* Griffini and *G. griffinii* Karny. Fore margin rounded, slightly produced in the middle. Anterior cross sulcus very shallow, wide; median length sulcus faintly impressed, well defined; hind margin truncate. Lateral lobes little raised, much longer than high, fore and hind angles rounded; lower margin distinctly descending backwards, slightly sinuated; hind margin slightly rounded,

nearly straight, without humeral sinus. Sulci of lateral lobes well impressed, space between them strongly arched.

Tegmina scarcely overreaching the hind knees, pale yellowish, veins tawny (except the praecostals). Venation according to type IV. 3 or 4 dark brown praecostals. Costal vein simple, costal area distinctly widened distad. Subcostal vein simply forked close before the tip; subcostal area scarcely half as wide as the costal one in distal part. Radial vein and radial sector each simply forked close before the end; sector arising from radial stem about in the middle of tegminal length. Medial vein simple, arising from radial stem in the middle between tegminal base and sector base (on right tegmen) or nearer to the latter (on left tegmen). Cubital vein simply forked basad (on right tegmen) or distad from the middle (on left tegmen). 5 anals (incl. Cus), the two last ones with a very short common stem, the last one ending already before the middle of tegminal length.

Hind wings strongly cycloid, dark blackish-grey in basal part, bright orange-yellow with dark bands along cross veins distad; these cross bands well defined, becoming gradually narrower towards the outer margin, practically wanting along fore margin.

Legs stout, moderately long, tawny; fore knees broadly black, middle and hind legs practically unicolorous, with a very fine single dark line along the knee joint. Fore and middle tibiae each with 5 pairs of very long, concolorous, movable spines. Hind femora on outer margin with 6--7, on inner one with 8--10, small, dark spines; hind tibiae outside with 6, inside with 5--6 dark spines.

Abdomen pale brownish-yellow, concolorous apical parts scarcely darker. Eighth segment strongly produced, about three times as long as the preceding one, length 3.5 mm. Ninth segment shorter than the eighth, in basal part descending backwards, then angulated and descending forwards, in this subvertical region with a fine median sulcus more strongly impressed in its lower part; apical margin emarginate, with arched, rounded lobes; no spines visible, perhaps obstructed by the subgenital plate. Cerci moderately long and stout, strongly pilose, about as long as the eighth segment. Subgenital plate (fig. 2) broadly emarginated in the middle of hind margin, with rounded lobes; styles inserted laterad, slender, not quite half as long as the cerci.

Length of body 20.5 mm., pronotum 5.2 mm., tegmina 20.5 mm. width 6.7 mm., fore femora 8 mm., hind femora 23.8 mm.

1 ♂ from Mt. Dulit.

I have the pleasure in naming this beautiful new species after its discoverer, the famous Swedish Entomologist, Dr. Eric Mjöberg.

Seems to come nearest to *G. moultoni* and *G. dayaka* amongst the Bornean species; further related also with the Sumatran and Malaccan species of the *modiglianii-griffinii*-group. Differing from all these already at first view by the bright colour of hind wings. End of ♂ abdomen also different from the hitherto known ♂ (comp. Treubia, v, 1--3, p. 226, fig. 84).

GRYLLACRIS PUMILA n. sp. (Plate 2, fig. 4, 4a).

♀. Very near in size and general appearance to *G. hanitschi* Karny from Southern Sumatra, but differing by the following characters:—

Occiput with a curved shining black cross band in its anterior region; from this band arise two length bands of the same colour which are produced till fastigium of vertex, separated from another by a very narrow, pale median line. Cross sulcus between fastigium verticis and frontis black; inner margins of antennal scrobes also blackish bordered, this colour being produced upon forehead into comma-shaped stripes which are convex against the middle line (all these markings much darker than in fig. 4a on plate 5). Genae not darker than forehead; labrum and mandibles slightly darkened. Antennae pale greyish testaceous throughout. Fastigium of vertex narrow, about $1\frac{1}{2}$ times as wide as the first antennal joint, with slightly protruding lateral margins. Clypeus wider and less high than in *hanitschi*.

Pronotum pale greyish-yellow, bordered as in *G. hanitschi* with shining black along all margins except the middle of fore and hind margin of disc. Black markings well defined, arranged like in *G. signifera*: a short black length line in the middle of disc; 7-shaped marking very narrow behind, strongly widened in front; the U-shaped sulcus of lateral lobes broadly bordered with blackish above along its whole length, then this black stripe angulated behind above and produced backwards along the sides of disc.

Tegmina hyaline in praecostal area, then darker, behind subcosta shining black by reflected light, dark grey-brown by transmitted light, tipwards becoming gradually paler, hyaline in apical region. All veins dark, blackish-brown. Venation practically as in *G. hanitschi* (Va.) 2 praecostals. Costa simple, costal area widened in distal part, about twice as wide as the subcostal area. Subcosta simply forked close before its end. Radial vein simple or simply forked close before the tip. Radial sector simply forked. Following veins simple. 5 anals (incl. Cus), all simple. Hind wings cycloid, greyish hyaline, with dark veins.

All femora at their tips and all tibial bases blackish. Spines of hind femora as in the Benkalen-specimen of *G. hanitschi*. Hind tibiae with 4 blackish spines inside, 5-6 outside.

Abdomen pale tawny-greivish, practically unicolorous. ♀ subgenital plate very regular, semi-circular. Ovipositor short, slightly curved, sharply pointed at tip.

♂. Length of body 13.5 mm., pronotum 3.7 mm., tegmina 13.5 mm., width 4.5 mm., fore femora 4.7 mm., hind femora 9.3 mm., ovipositor 6.2 mm.

1 ♀ from Nota Ragong. 17. 18. X.

Differing from *G. hanitschi* especially by the coloration of head and pronotum, and by the tegmina basad black, distad hyaline, whilst they are uniformly pale reddish-brown in *G. hanitschi*.

To the same species belongs perhaps also one larva from the same locality with black hind wing cases; dark coloration on pronotum very indistinct, nebulous, on knees scarcely perceptible, on head none at all.

NEANIAS (EREMUS) BORNEENSIS n. sp.

♀. Shining brown, legs somewhat paler. Size moderately large and stout. Head scarcely wider than pronotum, ovate as seen in front. Occiput and vertex strongly convex; fastigium verticis somewhat less convex, with blunt lateral margins, fully twice as wide as the first antennal joint. Subocular sulci distinct throughout their whole length, shallow, strongly widened downwards. Forehead shining, without distinct dots. Labrum ovate, a little higher than wide.

Colour of head unicolorous tawny-brown, fastigium of vertex nebulosely darkened along its lower margin. No ocellar spots. Clypeus and mandibles paler, brownish-yellow, the

latter ones faintly blackish bordered along outer margin. Labrum darkened. 1st and 2nd antennal joint yellowish, the others uniformly tawny.

Pronotum unicolorous, scarcely as long as wide, convex. Fore margin rounded, roundly produced in the middle region. Anterior cross sulcus very shallow, in the middle part hardly visible. Length sulcus shortened, present, but not very distinct. Behind it at either side of disc a circular impressed dimple. Posterior cross sulcus removed from hind margin, very shallow. Hind margin broadly emarginate. Lateral lobes much longer than high, little appressed; fore angle rounded; lower margin slightly rounded, somewhat descending backwards; hind angle roundly truncate; no humeral sinus. U-shaped sulcus and the posterior descending one distinctly impressed; further a S-curved sulcus along lower margin and an oblique one descending from hind margin forwards upon the disc. All spaces between the furrows strongly arched. Meso- and metanotum without any wing-pads, but with thickened lateral margins and thereabove with a longitudinal impression.

Legs concolorous, tawny-yellow, long and stout, pilose especially along lower margins of femora. Fore and middle tibiae furnished with moderately long, movable spines in 5 pairs, the last pair being short, subapical. Hind knees with a darker stripe along the upper margin of genicular lobes; all spines of hind legs with dark tips. Hind femora strongly incrassate basad, outer margin with 4-5 spines in distal half only, inner margin with 8-10 spines arranged along the whole length except the extreme basal part only. Hind tibiae, except the apical spines, with 5 spines on outer, 4 on inner margin.

Abdomen concolorous. ♀ subgenital plate not yet half as long as wide at base, with rounded hind margin, in the middle of which there is a very small, acute, backward directed tooth visible. Ovipositor only a little shorter than the whole body, straight throughout, slender, practically parallel-sided, bluntly pointed at tip.

♀. Length of body 21 mm., pronotum 5 mm., fore femora 7 mm., hind femora 14.2 mm., ovipositor 19.2 mm.

1 ♀ from Mt. Murud, 6500 feet.

Amongst the hitherto known species related with the Javanese *N. jacobsoni* by its broad fastigium verticis, differing

from it, however, by the above given characters. The Malaysian species of *Neanias* may be tabulated as follows:—

Key to the Malaysian species of Neanias.

(from Tonkin to New Guinea).

1. Tegmina a little shorter than pronotum, more than 3 mm. long.
Subgen. *Neanias* Br.
2. Hind femora with 10 spines on inner, 6-8 on outer margin.
♂ subgenital plate produced in the middle of hind margin into a narrow lobe which is dilated and slightly bilobate at apex. Patria: New Guinea. *N. lobatus* Brunner.
- 2'. Hind femora with 6-7 spines on either margin. ♂ subgenital plate with broadly rounded hind margin. Patria: Benkulen (Sumatra). *N. subapterus* Karny.
- 1'. Tegmina quite vestigial, much shorter than the pronotum, not longer than 1 mm. or quite lacking. Subgen. *Eremus* Br.
2. Fastigium of vertex fully twice as wide as the first antennal joint.
3. Size smaller. Vestigial tegmina present (♂). Hind femora with 10 spines on outer, 15 on inner margin. Patria: Eastern Java. *N. (E.) jacobsoni* Griff.
- 3'. Size larger. Tegmina lacking throughout (♀). Hind femora with 4-5 spines on outer, 8-10 on inner margin. Patria: Mt. Murud (Sarawak, Borneo). *N. (E.) borneensis* Karny.
- 2'. Fastigium verticis distinctly less than twice as wide as the first antennal joint.
3. General colour tawny, darker above, with a distinct pale length band on the thorax and the basal abdominal segments.
4. Hind femora with 4-5 concolorous spines on either margin.
Hind tibiae 4-spined on either margin. Patria: Philippines. *N. (E.) philippinus* Griff.
- 4'. Spines of hind femora dark at tips. Hind tibiae with 5-8 spines on either margin.
5. Hind femora with 6-7 spines outside, 8-9 inside.
Tegmina 1 mm. long (♀). Patria: Western Java. *N. (E.) javanicus* Karny.
- 5'. Hind femora with 4 spines on outer, 12 on inner margin. Tegmina 0.3 mm. long (♂). Patria: Tonkin. *N. (E.) fruhstorferi* Griff.
- 3'. General colour testaceous, infuscate above, tipwards black. Antennal scrobes narrowly dark bordered. Hind femora with 8-10 spines on either margin. Patria: China. *N. (E.) fusco-terminatus* Brunner.

Explanation of Plate 2.

- Fig. 1. *Gryllacris teuthroides* n. sp., lateral view, natural size.
 ,, 2. *Gryllacris fasciculata rotundata* n. subsp. dorsal view, natural size.
 ,, 3, 3a. *Gryllacris mjöbergi* n. sp. 1½ times enlarged. 3 dorsal view, 3a frontal view of the head.
 ,, 4, 4a. *Gryllacris pumila* n. sp. twice enlarged. 4 dorsal view, 4a frontal view of the head.

